REPORT OF THE WORK DONE

BY THE

BOARD OF HEALTH

OF THE CITY OF QUEBEC.

DURING THE YEARS 1893 AND 1894

BY

DR. L. CATELLIER

CITY MEDICAL HEALTH OFFICER.

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HEALTH COMMITTEE.

MM. MISAEL THIBAUDEAU, Chairman.
" M. FISET, M. D. L.
" S. BUSSIÈRES,
" F. DELISLE,
" B. LEONARD,
" J. P. GAGNON,
" N. DION,
" J. H. GIGNAC,
" R. P. BOISSEAU,
" D. GRIFFIN.

BOARD OF HEALTH.

Dr. L. CATELLIER, Medical Health Officer.
MM. JOS. COTÉ, Secretary,
" G. SAVARD, } Sanitary Inspectors.
" C. GINCHEREAU, }

MILK INSPECTOR.

M. L. POULIN, Veterinary-Surgeon.

CIVIC HOSPITAL.

Mr. T. PAQUET, Guardian,
Mrs. T. PAQUET, Matron.

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1893*

To the Chairman

and Members of the

Health Committee of Quebec.

GENTLEMEN :

I have the honor to submit the report of the work done by the Board of Health during the year 1893.

I

HEALTH COMMITTEE.

The Health Committee held 13 meetings during the past year, a proof of the interest now taken by its members in questions concerning public health.

Of the four principal projects discussed by the Health Committee during the year1892,—namely : the passing of new Health By-Laws ; the construction of a steam disinfector ; the enlarging of the Civic Hospital ; the removal and destruction of house garbage by the Municipal Authorities ;—the three first became acccomplished facts during the year 1893. The fourth is deferred but for a short time I hope.

The passing by the City Council on the 2nd May 1893, of By-Law 313, concerning the cleanliness, healthfulness and sanitation of the City of Quebec, marks an era in the sanitary condition of the city.

Among the articles of this By-Law is one in virtue of which no privies shall be allowed within the city limits after May 1st, 1895, and others regulating the manner in which house drainage and plumbing are to be executed.

Nothing that could possibly be done has been left undone by the Health Board in its efforts to bring this By-Law to the knowledge of the public.

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* This report was presented to the Health Committee in the month of April 1894, but the Committee decided not to have it printed till the following year.

It has been published in the newspapers at stated times,— printed in pamphlet form and distributed to a large number of persons. All the city plumbers have received copies, with the clauses which concerned them specially indicated.

The disinfecting apparatus built during the year and which needs but a few finishing touches before being utilized, is the counterpart of the one which the Federal Government, placed at the Quarantine Station at Grosse Isle and in the Ports of Quebec and Halifax. It was built from the same plans and according to the specifications for the Government disinfectors, kindly loaned to the City by the Hon. Minister of Public Works. This apparatus being in close proximity to the Civic Hospital and to the disinfecting pavilions completes our sanitary appliances for fighting contagious diseases.

The Civic Hospital has been enlarged so as to accommodate 80 patients. Gas has been put in not so much to light the hospital as to heat by means of gas-heaters the water needed for baths.

The only project considered in 1892, which has not been carried to a successful termination is the removal and destruction of house garbage, by the municipal authorities.

The early removal and rapid destruction of all easily decomposing substances which give off offensive smells and which soon become hot beds for the preservation and propagation of disease germs is a question of great interest to public health. A very simple means of getting rid of these substances is for householders to burn them in the kitchen stoves, and many sensible housekeepers have recourse to this plan, but by far the larger number allow them to accumulate in the yards there to decompose and become a source of danger.

In many cases also gas cooking stoves are taking the place of coal and wood stoves among the well-to-do; where such is the case, householders, in order to save expense, are forced to allow garbage to accumulate for some time before having it removed. If the danger to public health when this is done in winter be not very great, it is not so in summer. It would be much better if all such dangerous substances were daily removed and immediately destroyed by public scavengers. Con tractors can be found willing to remove them for a yearly sum not exceeding 8 cts per head of the population; this rate might even be slightly diminished.

In any case as the city already has an organized corps of street cleaners would it not be possible for the authorities by

engaging a few more men and acquiring a few more vehicles, to remove all house garbage, at least during the sumner season.

Among the new subjects, which occupied the attention of the Health Committee during the year 1893, none was of more importance than the inspection of milk. As stated in my last report, the milk sold in this city, has been subject to no inspection whatever ; milk is sold by milkmen, grocers and farmers on the different market places, and through the streets. In an inquiry made by me to trace the origin of a certain number of cases of typhoid fever, I became convinced that many families do not know where the milk used by them is obtained. It is procured from the corner grocer, who buys it from one or more farmers, (not always the same farmers) whose names, more frequently than not, are unknown to him. The Health Committee, considering that it is time that measures should be taken to inspect and regulate to a certain extent the sale of an article of such general consumption, has prepared with respect to this subject the draft of a By-Law which needs but the sanction of the Council to become law.

II.

CORRESPONDENCE.

The correspondence for 1893, consists of 331 letters receiv ed and 1207 letters sent out. Of the latter number 778 were notices served ordering the removal of nuisances.

III.

VISITS OF INSPECTION.

As in the past, our two inspectors, when not employed in placarding, or in looking after and disinfecting houses where cases of contagious diseases were found, were occupied in visiting markets, abattoirs and private dwellings in different parts of the city.

The first visits of inspection were made in response to complaints made to the Board of Health.

The list of these visits with the practical results obtained is given below :

Complaints made to the Board against unsanitary condition of premises, yards, etc.....	756
Visits of inspection made by Mr. Savard.....	1096

Visits of inspection made by C. Ginchereau	786
Properties found in an unsanitary state	1698
Yards cleaned	153
Cellars cleaned or put into a good sanitary condition	67
Sheds, cowhouses, and stables cleaned	24
Garbage or manure bins emptied	52
New bins built	5
Privies on galleries or over manure bins removed	17
Privies and garbage bins repaired	16
Privies cleaned	96
Privies suppressed	65
New privies constructed according to municipal regulations	11
Cesspools suppressed	10
Wooden drains removed	57
Water-closets put in	834
(A large number of plumbers having failed to report to the Board of Health, the figures here given are necessarily below the real number)	
Water-closets provided with ventilators	18
Waste pipes carried through roof	27
Defective water-closets removed	202
Water-closets repaired	56
Cisterns placed over water-closets	41
New baths put in	71
Sinks, washing-basins, etc., put in	381
House drains, waste-pipes and traps repaired	111
New house drains or waste-pipes put in	99
Old pipes removed	66
Old urinals removed	11
New urinals put in	26
Water-closets, baths, or sinks provided with traps	196
Sundries	61
Pigs removed from 8 yards	100
Cellars or houses from which fowls were removed	10
Carcasses removed from within the City limits since August 8th 1893	155
(This is much below the real figure as the citizens apply more frequently to contractor Samson than to the Board of Health)	
Actions taken out in the Recorder's Court to enforce compliance with the health By-Laws	26

GENERAL INSPECTION OF ALL THE HOUSES OF THE CITY.

Over and above visits made in search of suspected nuisances in consequence of complaints made to the Board of Health, we have succeeded this year in visiting all the private houses of the city, so as to know their actual sanitary condition ; 9275, dwellings were thus visited: 5815 by Mr Ginchereau, and 3910 by Mr Savard. The information obtained at each visit has been entered in the register kept at the office of the Board of Health ; where improvements have since been made on any of the properties visited such improvements when known to us have also been entered in the same book. This general inspection of all houses will be of great utility future work of the Board of Health.

These visits the principal object of which was to inspect water closets, baths, sinks, waste pipes etc., were as thorough as it was possible to make them.

It would not be correct to say that the inspection was confined solely to the plumbing since 29 subjects were inquired into at each house visited, but house drainage, being a permanent factor in the sanitary condition of a dwelling it was right that it should receive more careful attention. It must not be forgotton that this system of drainage forms a direct connection between the houses in which it is placed and the public sewer filled with noxious gases.

These drains must therefore be constructed according to certain rules if they are not to become sources of danger. The principles according to which drainage of this kind should be carried out are well understood at the present day, but they should be well known to the plumber and followed by him in their very least details, otherwise, he exposes the dwelling to the danger of being filled with poisonous gases from the public sewers.

The main waste pipe should start from the house drain which is connected with the City sewers, and come out above the roof. Its upper extremity should be open. With this main waste pipe are connected the smaller pipes, each one being provided with a trap, for water-closets, baths, sinks, etc. By this means the current towards the sewer is nowhere interrupted, whilst the flow of gases towards the house is intercepted by the trap. For greater surety against this flow of gas into the house, the sanitary by-laws in the greater number of localities require that a trap be placed in the drain between the

house and the public sewer ; in this manner the house drain is, in as far as sewer gas is concerned, completely cut off from the public sewer.

Until very recently house plumbing had not been subject to any regulations, and often through ignorance or economy the most elementary rules of hygiene were ignored. Our inspectors found hundreds of baths, water-closets and sinks without traps. There are about 6000 dwellings connected with the public sewers. And out of this number there are scarcely 800 in which the waste pipe passes through the roof and is open above it ; such being the case, the gases from the drains under the influence of the tide and of certain winds are driven with great force into the house drains and force their way through the the liquid of the traps.

There are still within the City limits 2282 privies, the larger number of which will disappear between now and May 1st 1895.

IV.

CONTAGIOUS DISEASES.

The total number of cases of contagious diseases in 1893, was much below that of 1892 ; 384 cases, and 57 deaths ; against 601 cases, and 168 deaths.

This decrease applies solely to diphtheria. Last year there were 156 cases of diphtheria and 43 deaths, against 457 cases, and 156 deaths, in 1892. Scarlet fever remained almost the same ; 88 cases with 4 deaths in 1893, against 84 cases and 8 deaths in 1892.

In 1892, there were but 7 cases of measles ; in 1893, there were 40. During these two years however there were no deaths from this disease.

The number of cases of typhoid fever was more than double that of 1892 ; 106 cases with 10 deaths against 49 cases and 4 deaths in 1892. The influence of the weather was very perceptible in this disease, nearly two thirds of the cases having broken out in September and October.

The following tabulated statements will show the number of cases of contagious diseases as well as the mortality per ward and per month.

Cases of contagious diseases declared to the Health Board of the City of Quebec, 1893.

WARDS.	Diphtheria. Cases made known.	Diphtheria. Deaths.	Croup. Cases made known.	Croup. Deaths.	Scarlet fever. Cases made known.	Scarlet fever. Deaths.	Measles. Cases made known.	Measles. Deaths.	Typhoid. Cases made known.	Typhoid. Deaths.
St. Louis	10	1	2	1	10	.....	3	....	.....	.....
Palace	5	3	.....	.....	10	.....	1	.....	7	.....
St. Peter	19	5	.....	.....	3	.....	2	.....	10	1
Champlain	3	2	.....	.....	2	.....	.....	.....	2	.....
St. John Baptist	25	6	1	1	16	1	29	.....	17	2
Montcalm	34	12	2	.....	22	2	2	.....	23	2
Jacques-Cartier	22	5	1	1	10	.....	3	.....	20	2
St. Roch	17	4	1	.....	3	1	.....	.....	13	3
St. Sauveur	11	4	.....	.....	7	.....	.....	.....	11	.....
St. Valier	3	1	.....	.....	5	.....	.....	.....	3	.....
	149	40	7	3	88	4	40		106	10
MONTHS.										
January	34	11	4	1	17	1	2	.....	1	.....
February	12	3	.....	.....	14	.....	.....	.....	3	1
March	18	4	.....	.....	11	.....	.....	.....	2	1
April	18	7	.....	.....	9	2	2	.....	3	.....
May	4	2	1	.....	7	.....	10	.....	4	.....
June	2	.....	.....	.....	.....	.....	17	.....	3	.....
July	4	1	.....	.....	1	.....	1	.....	3	1
August	4	.....	.....	.....	2	.....	4	.....	11	1
September	9	2	.....	.....	4	.....	.....	.....	38	4
October	9	4	.....	.....	7	.....	1	.....	25	1
November	20	4	.....	.....	5	1	3	.....	7	1
December	15	2	2	2	11	.....	.....	.....	6	.....
	149	40	7	3	88	4	40		106	10

V

CIVIC HOSPITAL AND DISINFECTING PAVILION.

40 Diphtheria patients were admitted to the Civic Hospital : 9 of these died, which gives a death rate of 22.5 per 100 ; 116 cases of the same disease treated at home gave 34 deaths, a death rate of almost 30 per 100. Two doubtful cases isolated in the hospital not having developed symptoms of the disease, were sent back to their families after disinfection :

Of the 40 patients admitted during the year only 8 were treated at the expense of their families ; the 34 others were treated at the expense of the city.

The following statement gives the ages of those admitted to the hospital.

Under 1 year,	cases admitted		1	died	1
From 1 to 5 years	"		14	"	4
" 5 " 10	"	"	6	"	0
" 10 " 15	"	"	9	"	3
" 15 " 20	"	"	3	"	1
" 20 " 30	"	"	3	"	0
Above 30 years		"	4	"	0

DISINFECTING PAVILION.

Thirteen families, in all 33 persons, were admitted to the disinfecting pavilion, while their houses were being disinfected, besides the patients and nurses leaving the Civic Hospital.

Three houses were put under strict quarantine during the year, on account of contagious diseases. In each case the inmates refused to send to hospital diphtheria cases which could not be isolated in a separate room.

YEAR 1894.

To the ... man

and ... mbers of the

... Health Committee,

GENTLEMEN,

I have the honor to lay before you the Report of the work done by the Health Board during the year ending December 31st 1894.

I.

HEALTH COMMITTEE.

The Health Committee met eight times during the year to discuss matters of great importance with respect to the Health of the City.

The President of the Committee visited the Health Office, once or twice each week in order to acquire a personal knowledge of the sanitary state of the city, and to judge of the means taken or to be taken to improve it.

A written report of contagious diseases was sent to him by the Health Office every Monday and another to his Honor the Mayor.

BY-LAW WITH RESPECT TO THE INSPECTION AND SALE OF MILK.

One of the most important measures of the year was the passing by the council of a By-Law which had been drawn up by the Health Committee during the preceeding year, putting the sale of milk under the control of the Board of Health and authorizing its inspection by a competent officer.

In conformity with this By-Law, on May 20th a milk inspector was named who entered on his duties immediately.

For details concerning this part of the report of the Board of Health, see the special report of Milk Inspector Poulin, V. S.

STEAM DISINFECTOR.

Our steam disinfector, constructed accordi[illegible]ern scientific ideas, was finished during the course o[illegible]iner. The official inspection took place on the 16th of [illegible], in the presence of this Honor the Mayor and the m[illegible]rs of the Council by Chevallier Baillargé City Engineer a[illegible]r E. Many, boiler inspector. These gentlemen having as[illegible]d themselves that the disinfector was both in its construc[illegible]n and working all that could be desired, the city took possess[illegible]n of it a few days later and placed it under the control of the Board of Health. The first regular disinfection took place on the 27th of August. and from that date until the end of the year, the household effects and clothing of twenty-two families in which contagious disease had broken out, were disinfected in the apparatus, which gave full satisfaction. However the experience of the first winter has proved to us that it will be necessary to slightly heat the building during winter so as to keep ice from forming in the tubes.

These tubes are well emptied, in winter, after each steaming, but there always remains enough water in certain delicate portions of the mechanism, to render it dangerous to use it the next time without having it put in order by a competent workman. This is costly work and it will certainly be a wise economy to use four or five tons of coal in keeping the water from freezing.

To render it possible to heat the building itself it will be necessary to finish it ; for this purpose a small outlay will suffice.

REMOVAL OF DEAD ANIMALS.

The Health Committee has renewed the contract made last August, with Mr Isaie Samson, for the removal of dead animals from within the City limits. This contract has put an end to the practice of burying these carcasses on Hare Point in the neighborhood of the public dump. They are now carted out of the city and got rid of in one way or another in the skinning house of the contractor. During the course of last year as may be seen in another part of this report 270 carcasses were carted away and disposed of by Mr Samson.

REMOVAL OF HOUSE GARBAGE.

The removal of garbage, the greater part liable to decom-

position, continues to be done in a more or less regular manner by private individuals, instead of by the municipal authorities. If the system followed here be allowable to a certain extent in winter, it is not so in summer when these noxious substances should be removed every day. In summer our inspectors' most important work is to visit yards and cellars so as to force tardy proprietors to remove those foul deposits. While waiting for something better the City might at least remove the garbage during the four months from June to September inclusive. It is during those months that the present plan is fraught with the greatest danger to public health.

THE CIVIC HOSPITAL.

During the year 1893, as stated in my last report the Health Committee in anticipation of an epidemic of Asiatic Cholera then raging in Europe, or of small pox then commencing to spread in the United States enlarged the Civic Hospital. But the wing put up at the time has remained unfinished. The wooden framework is still unbricked, the wood having shrunk, spaces one half an inch wide are to be found between the deals, these let in the rain in summer, the snow in winter. It would be to the City's interest to finish this wing if only to prevent rapid deterioration of the work already done. But there is a still more important reason, it is to allow the Board of Health to take in certain cases of scarlet fever which cannot conveniently be treated at home, for instance the case of a servant man or woman, stricken with this eminently contagious disease. In a large hotel, or in a family where there are several children, the impossibility of properly isolating such a case can be seen at a glance. Cases of this kind have already occurred.

The Jeffrey Hale Hospital, it is true receives some of these cases and I am happy to say that in those circumstances, it renders the city a great service. But it is only when patients are Protestants or in the service of Protestant families, that they can be admitted to this hospital. The two Catholic hospitals of the City do not receive scarlet fever patients.

We could not think of admitting them into the part of the hospital reserved for diphtheria patients on account of the danger of contagion, as scarlet fever patients rapidly become diphtheric. It must not be believed that scarlet fever is a comparatively mild disease like measles for example. The number of deaths from it is large and great efforts should be made to preserve the young from its ravages.

If the Health Committee has not succeeded in finishing the hospital this year, at least it has made an important improvement from a hygienic point of view. Until this year there was an insufficient water supply, the service pipe being but a inch in diameter, a pipe similar to those used in private houses. The Health Committee caused a four inch pipe to be put in which furnishes an abundant supply not only to the hospital, but also to the steam Disinfector and to the two disinfecting Pavilions. At the same time an old wooden drain partly blocked up which ran to the steam disinfecting building was removed, and in its place a regular drain was laid. Into this latter is driven when the disinfecting apparatus is working, the surplus steam and condensed water.

THE MORGUE.

Before 1891, the Morgue occupied a part of the building now used as a Civic Hospital, which it left when the edifice was utilized for a new purpose or rather when it was utilized for the purpose for which it was originally intended, for it was built in 1885, in anticipation of a small-pox epidemic, to receive those attacked by the contagion. A small house in St. Peter's ward, in the neighborhood of the Custom House, was then rented and put at the disposition of the Coroner. The residents of that quarter, and the business men who have their offices in that locality have never since ceased to complain against their unpleasant neighbor. In order to satisfy those who complained the city decided last year to cancel the lease and to establish the Morgue elswhere. After much searching for a convenient place the Board of Health being pressed for time was forced to abandon temporarily for the Coroner's, inquests one of the two disinfecting pavilions near the Civic Hospital ; the one intended for small-pox which had not been used. It gave up at the same time for the reception of corpses and for autopsies a small building made of boards on the same ground in which it kept its disinfectants. It is easy to understand what an inconvenience the neighborhood of the morgue is for the Civic Hospital ; moreover these new premises are not at all appropriate for inquests or autopsies. Since it appears to be an accepted fact that the city should provide the administration of justice with a building for Coroner's inquests, it is desirable that a suitable morgue should be built, inexpensive no doubt, but built so as to fulfil the purpose for which it is to be used. There should be an abundant supply of

water, the drainage should be perfect, there should be a small cold storage room in which to place the bodies while awaiting the autopsy. In the small building now in use, in summer the bodies decay almost as rapidly as when exposed to the sun. The liquids from the corpses and the water used during the autopsy are thrown on the ground and that just alongside of our hospital and at the very door of the steam disinfector.

This is a hygienic question which calls for the speedy attention of the Health Committee and Council.

PUBLIC VACCINATION.

At the beginning of the year 1894, in consequence of the presence of small-pox in several parts of the United States and even in the Province of Ontario, the Health Committee decided on having the children of the poor vaccinated at the expense of the City. Nearly 4000 children were thus vaccinated during the first three months of the year. But as this public vaccination ceased before all the children of the poor were vaccinated, because an epidemic of measles, which was raging had prevented a large number of these children from being vaccinated, the Board of Health wishing to continue the work commenced, published in the newspapers a notice reminding heads of families of the obligation which they were under of having their new-born children vaccinated under penalty of a fine, and informing them at the same time that they might have this vaccination free of charge by applying, every Monday at the office of the Board of Health.

Several adults presented themselves ; a small number of parents brought those of their children who were able to walk but on the whole, this notice had not the desired effect. I believe it would be better to return to the old custom, that of naming a physician in each ward to vaccinate the people at their own homes. In fact if the poor are asked to bring their children to the office of a physician, they generally abstain from so doing, because this would frequently necessitate a slight expense for cab hire.

But all the unvaccinated are not to be found among the poor. A large number of the children of the wealthy and above all of the middle class are in the same condition ; I have excellent reasons for believing that in proportion, the number of children vaccinated among the poor is greater than among the well to-do. One can form a fairly correct idea of the number of vac-

cinations from year to year in the city by the number of vaccine points which are brought in from Dr. Gauvreau's vaccine farm. In reality no other vaccine is used in Quebec, or even in the whole Province, the points from the St. Foye farm giving entire satisfaction.

Since 1885-86, when every one here was vaccinated, a very limited number of these points has been sent to the city if the few thousand points furnished the Health Board for the vaccination of poor children be not taken into account ; from these facts and from my daily intercourse with the physicians of the city, I may safely state that there are over 5000 unvaccinated persons in Quebec. If small-pox once reaches Quebec, what a rich source of supply will it not find.

WATER WORKS AND FILTER.

The control of the water works does not belong to the Health Committee, but the members of this Committee, as in fact, all the members of the Council, have this year taken great interest in the quality of our drinking water. The hygienic importance of this matter is such as to cause me briefly to allude, in this report, to a subject which as been more or less discussed since a few years. I wish to speak of the filtering of the water before it enters the water pipe. It is well known that the water supply of the City of Quebec, is taken from the river St. Charles, about half way between Lake St. Charles from which it flows, and the river St. Lawrence into which it discharges. A dam built at this place at the head of a rapid, raises the level of the water and forms a sort of overflow bassin from which start two iron pipes which carry the water by gravitation up to the highest points of the city and even of the citadel which overlooks it. These two pipes, one of which has an inside diameter of thirty inches and the other of eighteen at the starting point, deliver ten million gallons of water a day. A moment's reflection will show that ten million gallons a day for a population of 65000 is over 153 gallons a day per head of the population.

This volume of water is sufficiently large to make more than one modern city jealous and to recall to mind the inexhaustible water supply of ancient Rome.

Our aqueduct thus possesses to a high degree the first of the conditions of a city water supply, abundance. However such an abundance becomes embarrassing when it is question of filtering ten million gallons every day.

Let us now see if the water which the aqueduct furnishes us is deficient in the second quality which a water supply should have, namely purity.

The district from which the city water is drawn may be called the area of supply of the water works; it is not of very great extent.

Situated between the Jacques Cartier river on the west and north, and the Montmorency river on the east, it comprises the basin of Lake St. Charles and of the river St. Charles, above the spot where the water enters the pipes ; the basin of Lake Beauport and the Yellow River, and finally the basin of the Huron river with those of four or five small lakes which discharge their waters into it. By reason of the poverty of the soil this district is but thinly inhabited. There are a few farms on the Huron river, a cluster of houses near the Yellow river and a few dwellings on the west side of Lake St. Charles, but at a distance from it.

On the banks of the St. Charles, which are of considerable importance in connection with the subject which we are treating, over the distance of eight or nine miles which separate Lake St. Charles from the *chateau d'eau* scarcely two dwell ings are to be found and these are at a distance from the river. Our water supply cannot therefore be contaminated with house garbage. It is also to be remembered that in this district no manufactures producing noxious refuse are to be found. There is a saw mill of some size on the Yellow River and two smaller ones, which are generally closed, on the Huron river. But over and above the fact that those lakes and rivers are protected, in the interest of the city, by special provincial legislation, against all causes of pollution, a general federal law forbids the throwing of sawdust into rivers, and I am personnally aware that it is the intention of the chairman of the Water works Committee to have the law rigourously enforced. In any case it is very doubtful whether the saw dust from the Huron river can *reach the Aqueduct.* To do so it must travel twenty miles of water course without being stopped by either the bottom or sides of lakes or rivers.

I am not so certain about saw dust from the mill on the Yellow river much nearer to the *chateau d'eau*, and I willingly admit that there an active surveillance should be exercised. But even should a little of the saw dust enter the Aqueduct, it could not in itself contaminate the water in any way. It might in the course of time however help to clog the pipes. It is on this account that the city is opposed

to its being thrown into the rivers which supply us with water.

We may therefore rest assured that our water supply enters the Aqueduct without having been contaminated by any polluting matter on its way from the Lakes to the *chateau d'eau* where it disappears to see daylight no more until it flows from the taps in the houses of our citizens. But is this water from Lake St. Charles, Lake Beauport and the surrounding country pure. The water of Lake St. Charles, the most important of these lakes is principally spring water. This lake certainly receives water from the Huron river, but it is only necessary to compare the small volume of water of this river with that of the St. Charles into which it discharges to become convinced how largely the lake is fed from underground sources, that is to say from water that has been deprived of all impurities by slow filtering through the soil. The same remark is applicable to Lake Beauport and the other lakes of this region. All those who have visited these lakes know how limpid and agreeable to the taste these waters are. I do not hesitate to say that if our Aqueduct took its supply directly from lake St. Charles above the narrow discharge where the water is of great depth and exceptionally clear we should have water which would be always absolutely pure.

The defect in our water, a defect which is common to all surface water is that it is sometimes a little turbid. In springtime when the snow is melting and the water is rising, the current of the Yellow and St. Charles rivers becomes more rapid and stirs up the mud of the river beds. In summer the great storms carry down to the river earthy matter which renders the water turbid. These great storms, it is true, do not last long, in a few hours the water has recovered its usual clearness, but they occur from time to time and it is on this account that means of clarification if not a filter is asked for. It is well to remember that the two words do not mean the same thing.

While clarification simply rids the water of the less minute particles of matter which it contains in a state of suspension and which deprive it of its limpidity, filtration properly speaking goes further. It aims moreover at ridding the water of the myriad of infinitesimally small germs, microbes or bacteria, the name being of no consequence, which are to be found in greater or less abundance in all natural water no matter how pure it may be. Such of these microorganism as have their ordinary habitat in water, which live and multiply in it, the water bacteria, as they are called, are not dangerous, and there is no reason to try to remove them.

Those which are there by accident, transiently, do not multiply and do not live long. Among the latter some are dangerous. They are the special germs of certain well known diseases ; Asiatic Cholera for instance and the germs of typhoid fever. But for these dangerous germs to exist in the water, they must have been brought there voluntarily or accidentally. Thus, after the water of a river or stream has flowed through a town and received its drainage, it may contain dangerous germs of certain diseases. Towns which take their water supply from rivers into which other towns higher up empty their sewage should filter such water before using it. Thus London is supplied with water taken from the Thames and filtered ; it is taken above the great city, but below less important cities, which may have contaminated it.

But with the water from our aqueduct, which comes to us from an almost uninhabited district, there is no reason to fear the presence of these disease germs. There is then no reason from this point of view for filtering it.

Another consideration is that filtering is extremely expensive ; it requires immense basins of cemented masonry with alternate beds of gravel and and sand, which must be renewed from time to time. The water must pass through these beds from top to bottom, very slowly and without pressure, if the filtering is to be perfect. All rapid filtration is incomplete. That the filtering may be slowly done, the surface of the basin needs to be extensive. In view of these facts it would be better for the city to extend its aqueduct to Lake St. Charles.

But if the perfect filltration of our water is not necessary its clarification when turbid is very desirable.

Engineers having experience in such matters say that it might be clarified by causing it to pass rapidly upward through a bed of charcoal, protected above and below by layers of small stones, of gravel and of sand. Such a filter has been in operation for several years at Pawtucket R. I., and according to Mr Edwin Darling the hydraulic engineer of that city, it is in all respects satisfactory. All the floating matter with the exception of microorganisms is withheld, and the water pours from the filter, perfectly clean. One of the great advantages of this filter, or better of this strainer, lies in the fact that it cleans itself automatically. The water is shut off below, and a large sluice situated beneath the filtering beds is opened. Immediately the mass of filtered water, which is above, from twenty-five to thirty feet deep, passes rapidly downward this

time, under pressure of the weight, through the filtering layers, and carries off mechanically the dirt and other impurities which had adhered to their lower surface.

Mr Edwin Darling, who, when passing through Quebec during the course of last summer, had the kindness to visit our aqueduct at Lorette, believes it would be easy to build such a filter there. A construction 60 feet long by thirty feet wide and as many feet high divided into two equal compartments, so as to prevent all interruption in the supply, would be, according to him, amply sufficient for the daily filtering of our ten million gallons of water. This construction might be built along the course of the pipes, fifteen arpents from the *chateau d'eau* in the immediate vicinity of the river St. Charles. There already exists in this place a sufficient difference of level to cause the water to rise. Of conrse, I understand that such an undertaking should not be entered upon without first ascertaining by a few inexpensive experiments that the water of our aqueduct can be filtered in this way. It would have to be ascertained whether the fine sand which slightly reddens or renders our water so turbid according to the case, would be arrested by the filter. The filter once clogged, the water would come from it just as turbid as when it entered it. Now this rapid filtering, under pressure, ought to result in the rapid clogging of the filtering beds. Experiments on a small scale but with all conditions of filtration on a large scale reproduced is the only means of obtaining exact information on this point.

II.

CORRESPONDENCE.

Letters received	208
Requests received	2
Letters sent out	1242
Reports to the Provincial Board of Health prescribed by law	208
Reports received from the City Police	43

III.

SANITARY INSPECTIONS AND THEIR RESULTS.

I consider those inspections as being one of the most important parts of our sanitary system. The visits of Inspectors with explanations, and discussions between inspectors and

citizens which necessarily accompany them spread little by little sound ideas of hygiene among the masses ; I must say in praise of our officers and the public that those visits made with discretion and propriety by the first named are generally taken in good part by the last named. The principal object in view in sending our Inspectors round is to see that yards and premises are kept clean and that the drainage and plumbing are in good order. In all these respects a decided improvement is noticeable from year to year.

The *following statement* will show the causes, number nature and results of the sanitary visits.

Complaints made to the Board of Health with respect to sanitary matters	657
Inspections made by Inspector Savard	2880
do do do Ginchereau	2494
Time employed on duty other than inspections :	
By Mr. Savard, equivalent to 39 days.	
do Giuchereau, do 20 do	
Properties inspected	1948
Yards cleaned	137
Cellars cleaned and put in proper sanitary condition	57
Sheds, cowhouses or stables cleaned	34
Manure or garbage bins emptied	32
Privies, manure or garbage bins repaired	26
Privies cleaned	181
New privies built according to municipal regulations	26
Gallery privies suppressed	67
Privies over manure bins suppressed	42
Fixed privies suppressed	149
Cesspools suppressed	12
Privies suppressed	17
Wooden drains removed	250
Cast iron waste pipes and house drains put in	169
Lead waste pipes put in	6
Zinc or tin waste pipes put in, contrary to the law, temporarily tolerated for some good reason	10
Wooden funnel pipes or stone bassins without traps communicating with the drain pipe, but not with the water works, suppressed in cellars	22
Sundry dangerous water closets suppressed	73
New water closets put in	675
Ventilators placed in water closets	31
Waste pipes carried through the roof	4
Water closets repaired	82

Cisterns placed in water closets	3
New baths put in	18
Old baths suppressed	10
Urinals put in	7
do removed	11
Old tannery cisterns cleaned out	15
Old waste pipes, drains, traps and sinks repaired	129
do do do do suppressed	130
Traps placed under sinks, water closets, baths	502
New sinks, baisins, lavatories put in	85
Interior of houses cleaned	20
Taps repaired	31
Water-pipes repaired	16
Divers cleanings	84
Fences put up	8
Live pigs removed from 12 properties	35
Number of properties on which we found fowls, kept in cellars or garrets from which we removed them	11
Actions taken out in the Recorder's Court to cause the removal of nuisances	31

DEAD ANIMALS REMOVED.

BY MR ISAIE SAMSON.

Horses and colts (2)	192
Cows	50
Calves	9
Dogs	7
Sheep	6
Pigs	2
Goats	2
Kids	1
Bears	1
Total	270

CONTAGIOUS DISEASES.

For 1894. Diphtheria shows a slight decrease, 135 cases, and 34 deaths against 156 cases and 43 deaths in 1893,—typhoid fever a marked decrease,—41 cases and 7 deaths, against 106 cases and 10 deaths in the preceeding year. Of scarlet fever which exists in a more or less epidemic state all through the Province, there were in 1894, 114 cases and 7 deaths, against 88 cases and 4 deaths in 1893.

It is measles that raise the figure of our contagious diseases his year. An epidemic happily of a mild form suddenly broke ut in February, and as suddenly disappeared in June. 331 ases and 4 deaths were reported to the Board of Health, but I know that there were many more cases. Poor families seeing how mild the disease was did not call in a physician. The greater number of cases entered in our books were reported by Doctors who had heard of them casually.

Three houses were put under strict quarantine on account of contagious diseases ; ninety four others were simply placarded and watched, 38 by Mr. Savard and 56 by Mr. Ginchereau.

One hundred and ten dwellings were disinfected, 46 by Mr. Savard, and 64 by Mr. Ginchereau. Apart from the disinfection of the houses, clothing and heavy household effects were disinfected in the steam disinfector since it has been in working order, that is since the end of August.

The two following tabulated statements give the number of cases of contagious diseases with the number of deaths in each ward and for each month.

Cases of contagious diseases declared to the Health Board of th
City of Quebec, 1894.

WARDS.	Cases made known.	Diphtheria. Deaths.	Cases made known.	Croup. Deaths.	Cases made known.	Scarlet fever. Deaths.	Cases made known.	Measles. Deaths.	Cases made known.	Typhoid. Deaths.
St. Louis	8	1	.....	.....	15	1	31	.....	.....	.....
Palace	4	.....	.....	.....	11	.....	36	.....	.....	.....
St. Peter	20	5	.....	.....	4	.....	18	.....	4	.....
Champlain	9	4	.....	.....	1	.....	3	.....	.....	.....
St. John Baptist	22	5	3	2	26	1	69	1	10	2
Montcalm	8	.....	.....	.....	14	.....	80	1	7	1
Jacques-Cartier	25	6	3	3	11	1	29	1	7	2
St. Roch	17	3	.....	.....	13	1	38	1	7	.....
St. Sauveur	7	4	1	.....	10	1	20	.....	3	.....
St. Valier	8	1	.....	.....	9	2	7	.....	3	2
	128	29	7	5	114	7	331	4	41	7
MONTHS.										
January	29	4	.....	.....	5	.....	.....	.....	2	.....
February	14	3	.....	.....	9	2	12	.....	1	.....
March	5	1	4	2	11	.....	79	1	3	.....
April	5	.....	.....	.....	18	.....	98	2	.....	.....
May	18	5	.....	.....	22	2	112	1	2	1
June	11	1	.....	.....	12	2	29	.....	.....	.....
July	8	4	.....	.....	6	.....	.....	.....	3	1
August	3	.....	.....	.....	14	.....	.....	.....	3	.....
September	.....	.....	.....	.....	4	.....	.....	.....	12	5
October	17	4	1	1	3	.....	1	.....	12	.....
November	10	5	1	1	3	.....	.....	.....	3	.....
December	8	2	1	1	7	1	.....	.....	.....	.....
	128	29	7	5	114	7	331	4	41	7

CIVIC HOSPITAL AND DISINFECTING PAVILION.

Out of 135 patients attacked by Diphtheria, only 18 were treated at the Civic Hospital ; 5 died there ; of the 18 patients admitted 13 were treated at the expense of the city and 5 at the expense of their families.

The total number of days of treatment was 127 an average of 8 days for each patient. Calculating only for those who recovered, the average will be a little more than nine days. This number of days appears quite insufficient for proper isolation.

t is well known, that the disease germs may be found in the hroat several days after the disappearance of the membrane. But parents insist on removing their children as soon as they appear to be better, giving but little thought to the danger to which they may be exposing the other members of the family. Happily during the past year no case was traced to this cause.

The following table gives the age of each patient admitted to the Hospital and the death rate.

Under 1 year, no admittance :

From	1	to	5	years	Cases admitted	7	Deaths	4
do	5	do	10	do	do	5	do	1
do	10	do	15	do	do	2	do	0
do	15	do	20	do	do	2	do	0
do	20	do	30	do	do	2	do	0

Every patient restored to health is disinfected in the disinfecting pavilion before being allowed to return to his famlly. The same is done with the nurses. Twenty-eight other persons came to the pavilion to be disinfected some having come in contact with persons having the disease, others because their houses were being disinfected by sulphur. During 24 hours such dwellings are not habitable.

VI.

VITAL AND MORTUARY STATISTICS.

The statistics of the Provincial Board of Health for the year 1894, are not yet published. By examining the registers of the different parishes and cemeteries of the city, as carefully as it was possible for me to do so, I have been able to make a statement of the births and deaths of the year. As certain parishes extend beyond the city limits, I was obliged to include this non-city population in my calculation. I have made out the population of Quebec, to be 67000 souls instead of 63000 as given in last census, counting the non-city population already referred to as 2000, and the natural increase since 1891, 2000.

I do not assert that the figures here given are absolutely correct, but on account of the precautions, I took in obtaining them, they cannot be far astray. 2741 children were born alive during the year, and 2066 persons died. The proportion of births per 1000 was 40.9 while the death rate was 30.8.

This mortality is very high, although, compared with that of 1891, when it was 41,2, there is a decrease of 25 per cent ; since 1891, the death rate has decreased each year. It is still

however much larger than in the greater number of cities of Europe or of the United States of the same size as ours. It is true that the births are very numerous in our city, and it is well known that the death rate depends very much on the birth rate, early infancy paying a large tribute to death. In our country this tribute is large and falls chiefly on the French Canadian population. It is bowel complaints which cause the larger number of deaths among children. Every summer the the infantile population of our towns is actually decimated by diarrhoea.

The progress of hygiene, the inspection of milk and a better knowledge of the care to be given to new born infants by mothers will gradually, it is to be hoped, reduce the enormous death rate among children.

The mortality caused by contagious diseases properly so called, those over which the Board of Health may be said to exercise some control was but 52 during the year.

VII.

INSPECTION OF MILK.

Report of Mr L. Poulin, Veterinary Surgeon and milk Inspector.

The following are the principal duties of the milk Inspector.

1o. Issue licenses to persons wishing to sell milk within the city limits.

2o. Visit cow houses, dairies, milk depots, to make sure that they are suitable, and the cows in a healthy condition.

3o. Test the samples of milk offered for sale to ascertain that they contain the ordinary proportion of nutritive matter, and that they have not been adulterated.

We give here the result of the Inspectors work from the date of his nomination in May 1894, until December, 31st of the same year.

LICENSES.

Licenses issued : for unskimmed milk.....	202
do do do skimmed.....	28
Total.....	230

VISITS TO COW HOUSES DAIRIES, ETC.

Number of cow houses visited :

In the City of Quebec	80
do Hedleyville	4
do Beauport	5
do Charlesbourg	15
do St. Ambroise	30
do L'Ancienne Lorette	8
do Little River	12
do St. Joseph de Lévis & Harlaka	30
Total	184

Number of cows examined	1642
do do dirty cows	12
do do sick	3
do do crowded cow houses	9
do do badly aired cow houses	3

TESTS

The tests are made with the Lacto-densimeter, the Thermometer and the Babcock.

The amount of butter fat found in the unskimmed milk, sold in the city of Quebec, during this first year of inspection, varied from 3 to 5 o/o with a density of 1029 to 1033. Only 17 samples of this milk did not contain the minimum of 3 o/o of butter fat.

The 40 samples of skim milk sold for such, gave proportions of butter fat which varied from 1 to 3 o/o with a density of 1033 to 1036.

The following table contains more lengthy details of the tests of unskimmed milk.

Number of tests			385
Containing from 4 to 5o/o	of butter	fat.	204
" 3 to 4o/o	"	"	164
" 2 to 3o/o	"	"	17

One sample sold for pure milk was found to be skimmed and adulterated.

The minimum of butter fat which unskimmed milk should contain is 3 per cent. But the law does not fix the amount of butter fat which should be found in skim milk. All the law exacts is that the skim-milk be sold in cans labeled skim-milk.

There were but two cases of *lait filant*. This kind of milk is due to a microbe which develops in the milk, and thickens it

until it has the appearence of syrup, In each case the cans an
the cows were desinfected and the disease did not again appea

The number of milkman warned by means of letters to procure a license was.. 18

The number ol milkmen warned by letter for infraction of the law was..... 123

Three actions were taken out in the Recorder's Court.

One for selling skim milk in cans which were not labeled according to law.

Another for selling skimmed and adulterated milk.

A third for carrying kitchen refuse in the same cart and at the same time as the milk.

In each action judgment was given in favor of the city.

The whole respectfully submitted,

L. CATELLIER, M. D.
City Medical Health Officer.

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